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Abstract

The report to the Board of Education of the Denver Public Schools in Colorado describes the establishment of the Balarat Center, an outdoor environmental education center for children. The report identifies the objectives (scientific, educational, recreational, cultural and socioeconomic) of the Balarat Center and lists recommendations for programs to be developed. In addition, it describes the activities and programs already under way at the center. (TL)

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DENVER PUBLIC SCHOOLS
Division of Education
Department of Instructional Services
1969-1970

A REPORT TO THE BOARD OF EDUCATION

OCTOBER 16, 1969

THE BALARAT CENTER FOR ENVIRONMENTAL STUDIES

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THE NEED FOR OUTDOOR ENVIRONMENTAL EDUCATION

If the major purpose of educating children is to prepare them for their eventual roles in society, much importance must be placed upon the ability of each child to communicate effectively through development of skills in reading, writing, listening, and speaking. It will also be considered important that each child understand and manipulate mathematical figures. So that he has an understanding of his present, he will need to learn his past -- its history, its art, and its music.

To be sure, these are indeed important objectives for our schools to meet. Yet we have almost totally ignored an area which serves, in a sense, as the very foundation for all education. It is an area without which there would be no education. It is an area which encompasses the role played by natural resources in our country's development both in its present and in its potential influence.

We have taught our children to prepare to take their places in society and yet failed to stress the importance of natural resources in what that society will be like. We have not scored the critical lack of urban planning in such important areas as air and water pollution, the spawning of slums, the population explosion, and waste disposal. As a result, our generation has contributed heavily in fouling the air with pollutants, turning our waterways into open sewers, exterminating and decimating certain species of wildlife (including our country's emblem, the bald eagle) and polluting many of our scenic splendors with billboards, hamburger stands, junkyards and litter.

The children of school age who will in the future assume responsibility for this country's natural resources must learn now the values of their natural heritage not only to them as individuals but to their community, state, and nation. Indeed, unless schools begin to consider natural resources as vital a subject as the three R's, we may not have the material such as paper and pencils with which to do our reading, writing and computing in the future!

Those of us concerned with the despoilation of nature know that educators must develop and fuse into their school curriculum a comprehensive program of natural and human resource education, one which might more descriptively be called "Outdoor" or "Environmental" education. The program should be designed in such a way that it is not simply tacked on to an already crowded curriculum. Rather, it must suffuse teaching and learning in all disciplines. Such a program, however, is best taught elsewhere than in the formal classroom environment. For example, if a teacher wants pupils to conceive the extent of an acre of land, it will not suffice to tell them how many square feet an acre comprises. The extent of an acre will only become apparent when the pupil can himself actually measure and then look at what amounts to an acre of land. When this happens, the classroom has been moved temporarily outside the school building and into an open field. In other words, environmental education implies the teaching of a particular subject area in the kind of learning environment that will best compliment and make that teaching meaningful.

All too often teachers become dispensers of information and their pupils merely sponges who soak up that information. Opportunities for children to apply to real-life situations the knowledge gained in the classroom are usually quite limited because of the physical limitations imposed by the classroom. Instead, the teacher must often create an artificial situation to give children experiences in applying what they have learned. The learning which takes place in this kind of environment is necessarily limited. One learns primarily what one lives.

Verbal and abstract "indoor" learning can come alive through genuine experiences. In education, the vicarious world of books can be replaced by the real world of people and things. Because contemporary curriculum appears to emphasize abstract knowledge primarily, the necessity for hanging onto concrete learning becomes more important than ever. A pupil's perceptions of his natural environment will be enriched to the extent that he has the opportunity to use his five senses. In science, school curriculum guides have been primarily designed for indoor work. But the study of animals and plants in relationship to their natural environment cannot be best understood merely by looking at pictures. Through environmental education, field observations and studies will bring concepts and principles to life and thereby make them meaningful.

Basically, then, outdoor education or environmental education (as we prefer to call it) is an extension of the school curriculum into the outdoors where natural resources can serve as teaching tools to provide learning experiences in language arts, science (biological and physical), mathematics, art, music, home economics, health, recreation and physical education.

Education in the out-of-doors is to some extent also based on the premise that "Learning can be fun." Emphasis in an outdoor educational program is placed upon teaching the whole child; that is, concern exists for helping him develop not only his academic but his social and leisure skills as well.

Environmental education is not a subject in itself but rather a way of learning in a different and informal learning environment, in a living classroom. Environmental education does not substitute for learning that occurs in the formal classroom but compliments it by making it more vital and meaningful than it might have been otherwise.

THE BASIC OBJECTIVES OF THE BALARAT CENTER

One general objective is that of establishing a program which will help young persons develop an ecological conscience--that is, a sense of responsibility based both on an understanding of and a respect for the interactions of all elements in the natural community. These interactions pupils can, in turn, relate to their urban environment to assist them in finding themselves, in measuring the limits of their responsibility, and in adding appreciably to their self-confidence.

Another general objective of Balarat is to provide a program of special education for those children who require it. Such a program will combine efforts of the school and community to work together in educating those who are less fortunate economically and socially, as well as those who have mental and physical handicaps.

More specific objectives include the following:

Scientific

--to provide a natural area where science-oriented pupils will learn the history of plants and animals, where they can investigate the ecology of natural communities

--to give pupils access to a natural outdoor laboratory which will stimulate scientific curiosity and which will offer some representative sample of the native landscape and biota beyond the urban landscape

Educational

--to offer an outdoor classroom in which subjects now taught indoors may be enriched and expanded

--to provide pre-vocational training through the various services and activities being carried on as a part of the site operation and development.

Cultural and Socio-Economic

--to transport pupils to a site where those of all races and economic backgrounds from throughout the metropolitan area can congregate and which will offer an atmosphere in which to learn about and from one another

--to give youngsters a chance to learn good outdoor manners and behavior; to develop an appreciation, respect, and reverence for all living things

--to provide an opportunity for pupils to get to know one aspect of the world that is not padded by foam rubber, not encased in styrofoam, not wrapped in cellophane, and not packaged to look like something other than it really is

Recreational

--to allow pupils to use a place for those outdoor pursuits which truly refresh the individual and to make thereby a contribution to effective and productive use of leisure time

THE BOARD OF EDUCATION RESPONSE

In response to this critical need, the Board of Education of the Denver Public Schools in January of 1969 initiated development of a unique program of outdoor education. Part of this initial response was the acceptance by the Board of a gift of private land consisting of approximately 650 acres in Roosevelt National Forest near Jamestown, Colorado, for the express purpose of developing an outdoor education center.

As a subsequence to this event and as a result of the interest in this project shown by the Denver Public Schools, the United States Forest Service offered to set aside adjacent to the original 650 acres an additional 3,000 acres of Roosevelt National Forest for educational purposes. In addition to the use of land, the Forest Service sent teams to make preliminary studies about where best to situate trails and out-camps.

In February, 1969, Mr. Ken Horn, supervisor of Science Education, and Mr. Carwin Tolman, formerly of the State Fish, Game and Parks Department, were assigned to begin development of the programs to be established at what came to be called the Balarat Center for Environmental Studies.

PROPOSED PROGRAMS TO DEVELOP THE BALARAT CENTER

The purpose of this report is to inform the Board of Education of the progress that has been made during the past few months towards the realization on an outdoor environmental center for the children of Denver. After an exploratory study of the Denver community, a survey of the existing outdoor programs in other parts of the United States, and consultation with outdoor education specialists, planners realized that the Denver Public Schools has the potential to develop a most significant and innovative outdoor educational program to meet the needs of twentieth century children in a large urban environment.

The initial tasks undertaken were to establish:

A. Which objectives for outdoor education were logical and attainable?

B. What priorities should be assigned to each general objective?

C. Which pupil populations could best be served in terms of probable resources?

D. When would it be reasonable to have both curriculum and the physical facilities available for the desired program?

E. In relationship to the total Denver Public Schools educational program, what budgetary support could be anticipated?

F. Were there prescribed time deadlines?

In order to establish an effective procedure to accomplish the initial tasks, the Office of Research Services has undertaken, in cooperation with the Balarat staff, a systems-analysis approach to the planning of Balarat. The Programmed Evaluation and Review Technique (PERT) characteristic of many such approaches should greatly assist in answering questions; establishing

objectives; identifying various constraints; considering alternatives; and developing a sequential plan for implementation based on cost analysis.

What are the Proposed Programs?

The four programs which should be developed first at Balarat are as follows:

- Leadership Training and Career Education

  The career education program, which is a part of the total leadership training area and which will concern high school pupils only, will initiate the resident programs at Balarat. As now envisioned, these high school pupils will be taught a variety of vocational and pre-professional skills by having the responsibility for part of the construction, maintainence, administration, and instruction at Balarat.

  Each pupil, whether part of an eventual food service contingent or of the Balarat newspaper staff, will be taught to relate his job to the environment. Each child will continue his other academic studies while on the site and will enjoy the additional enrichment of outdoor experiences planned to motivate his learning and enlarge his experiences.

  The career education program will relate directly to the adult Balarat Foundation. Adults in the Denver community with skills and knowledge potentially helpful to the pupils at Balarat will be urged to cooperate in the daily functions of the school. This intimate adult involvement should prove of great benefit to the instructional program, as well as providing means for adults to contribute the technology and resources for the solution of specific problems.

. Resident Outdoor School

Although Balarat abounds with possibilities for teaching science in an ideal site, it also provides an area in which an interdisciplinary educational approach should flourish. The purpose of the Resident Outdoor School will be to offer a one-week experience in interdisciplinary-education to all children in grades five and seven.

This program will require the building of dormitories and other living facilities to accomodate approximately 400 children at any one time. Construction can be phased over a period of three years to provide either two or three dormitories, depending on architectural design, plus a dining hall. Later expansion would provide facilities for including another grade level in this program.

. Special Education Facility

This program, which parallels the resident program, would be for the blind, deaf, ambulatory, and perceptually handicapped pupils. In the beginning, physical facilities for approximately 120 such children would be specially designed to meet their needs. These physical facilities will be situated close to the other residence center so that every effort can also be made to include the children in those aspects of the regular program from which they can benefit.

. Multiple Use-Teacher Training Facility

One program would be designed to give Denver Public Schools staff opportunities during weekends and summers to participate in on-site training programs for outdoor education. As a result, the Denver Public Schools would be constantly recruiting and maintaining a staff of teachers and administrators dedicated to enriching and extending

the curriculum beyond the classroom.

This facility would also serve as a site for many other inservice programs such as those for Student Council leadership, human relations training, Red Cross, music and art, and so forth.

In cooperation with other communities and local colleges and universities, this Center could also serve as a national center at which teachers throughout the country could learn to teach outdoor education skills. Renting Balarat's facilities for such uses would provide over a period of years a source of income with which to amortize costs of site development.

Physical facilities needed for this program will be four dormitories capable of serving a population of 320 adults or high-school-age persons. Dining facilities developed for the other programs could serve the needs of this one.

PROGRESS BEING MADE TOWARD THE GOALS

Initial studies indicated that the development of the site would require extensive planning and preparation if the district were to realize its objectives.

Following are activities and programs that have been carried out from February, 1969, to this time:

. Drilling wells for water

The drilling of wells to assure a dependable water supply for Balarat was thought to be a primary requirement. On the amount of water available depended both initial use and future development.

During the month of April, Woodward, Clyde and Associates was awarded a contract to determine the water needs and water supply potential. Woodward and Clyde determined that for a population of 1,150 persons living at the site at any one time there would be a need of 40 g.p.m. (gallons per minute). Seven wells were drilled at the site. The results are listed in Table A.

TABLE A

Well number	Depth of well	Result of four-hour pump test	Result of 24-hour pump test
1	285 ft.	Dry	---
2	230 ft.	6 g.p.m.	3 g.p.m.
3	140 ft.	13.5 g.p.m.	12.5 g.p.m.
4	100 ft.	Dry	---
5	150 ft.	Dry	---
6	125 ft.	24 g.p.m.	16.0 g.p.m.
7	110 ft.	26 g.p.m.	12.5 g.p.m.
Total g.p.m. available at Balarat		69.5	44.0

The minimum of 44 g.p.m. now available at the site would supply the needs for the programs that have been outlined.

. Field Trips on a Day-Use Basis at Balarat

A proposal to begin using the Balarat site for a limited number of daytime field trips during this school year has been made.

During the past summer both a trail system and a tentative teacher's curriculum guide were developed. The guide and the marked trails will help teachers provide enriched environmental learning experiences to children from kindergarten through twelfth grade on a day-use basis.

A bus to be assigned to Balarat has been requested. This bus should make approximately 125 field trips during the 1969-1970

school year. An additional request has been made that a driver-naturalist be assigned to drive this bus in order to provide the teachers with a trained resource person during each trip taken to Balarat. On days during which the driver would not be taking groups to Balarat, he would be assigned to developing curriculum materials for the overall program.

This initial use of this site is proposed for the following reasons:

--to allow teachers with a background of outdoor educational experience in several subject areas and grade levels to utilize the site and trail systems for planned learning experiences

--to provide an opportunity for the staff and the curriculum committee to evaluate and to develop further the trail systems and guides

--to popularize use of the site by revealing its potential

--to identify additional needs and further uses of the site.

. Public Relations Program

One important task has been to develop a public relations program to inform the community of the general plans for the Balarat center.

A number of meetings have been held with colleges, civic groups, PTA's, and individuals to inform them about Balarat. Some of these meetings were held at the Balarat site.

Some 20,000 brochures describing the general objectives of the Balarat program were printed in April. A distribution was made to all school personnel. Many others were sent to national agencies and individuals who could be of assistance in helping to develop Balarat. Newspaper and television coverage has helped inform the community of the proposed Balarat programs.

Since only through community support can the Balarat program become a reality, an even greater public relations effort is planned for this coming year.

. The Balarat Foundation

A Balarat foundation is now being formed. The first phase is the appointment of a steering committee to plan and supervise recruitment of foundation members, revise the suggested organization of the foundation, formulate fund-raising plans, and institute the full operation of the Balarat foundation itself.

When the Environmental Center is fully under way, members of the foundation will assume an active function in its daily operation. The organizational chart included with this report shows the proposed relationship of the foundation to the student government, instructional teams, and learning corporations. The foundation works directly with the pupils in each of their departments to assist in the development, administration, and operation of the Balarat government and pupil corporations. This

Balarat Foundation

Proposed Balarat Town G

Advisory Committee
- Inter - Comm
- Industrial
- Environmental
- Educational
- Business
- Labor Interests

Balarat Foundation Board

Steering Committee

THE STUDENT BODY
- Semester Residents
- Short Term Residents
- All City Student Council

Chairman

Manager of Improvements	Traffic & Transportation	Traffic & Transportation
	Building	Building
	Parks & Recreation	Parks & Recreation
Manager of Government Services	Commissioner of Supplies	Commissioner of Supplies
	Postmaster	Postmaster
	Election Commission	Election Commission
	Clerk & Recorder	Clerk & Recorder
Manager of Revenue	Treasurer	Treasurer
	Revenue Development	Revenue Development
Manager of Safety	Health & Sanitation	Health & Sanitation
	Fire Department	Fire Department
	Ranger - Police	Ranger - Police
Manager of Resources	Human Resources	Human Resources
	Natural Resources	Natural Resources
	Business Development and Regulation	Business Development and Regulation
Commissioner of Communications	Mass Communication	Mass Communication
	Performing Arts	Performing Arts
	Communicative Arts	Communicative Arts

Proposed Balarat Town Government

Instruction Teams

Learning Corporations

THE STUDENT BODY

Semester Residents

Short Term Residents

ll City Student Council

Balarat Town Council

Grievance System

Balarat Administrator

Mayor

fic & Transportation

ding

s & Recreation

issioner of lies

master

tion Commission

k & Recorder

surer

nue Development

lth & Sanitation

e Department

ger - Police

an Resources

ural Resources

iness Development Regulation

s Communication

forming Arts

municative Arts

Manager of Improvements

Manager of Government Services

Manager of Revenue

Manager of Safety

Manager of Resources

Commissioner of Communications

Industrial Arts
Naturalist
Social Studies
Physical Education

Business Education
Social Studies
Distributive Education

Business Education
Social Studies
Mathematics

Science-Biologist
Social Studies

Sociologist-Psychology
Geologist
Business Education

Language Arts
Music
Drama
T.V. - Radio
Journalism

Construction

Distribution

Personal Services

Public Services

Food Services

Manufacturing

Marketing

Radio - T.V.
Theater

Newspaper

organization should provide a means for significant, practical, creative, and constructive participation of the adult community in activities at the Balarat Environmental Center. Although fund-raising is one of the foundation's major responsibilities, the foundation will also assist in providing specific solutions for the particular needs of the pupils at Balarat.

. Teacher Inservice Programs

The effectiveness of any program at Balarat will depend greatly upon a well-trained teaching corps. A program of teacher training has already been established in cooperation with Colorado State College to offer graduate-level courses. The first such outdoor education class was conducted during June at both Fairview Elementary School and Colorado State College's Old Man Mountain Camp at Estes Park. Thirty teachers learned an interdisciplinary approach to outdoor education.

Two more outdoor education classes for Denver Public School teachers are being offered this fall at South High School. Other classes are presently planned for the spring and summer of 1970.

. Custodian Assignment at Balarat

In order to fulfill legal obligations incurred in accepting the gift of land, the Denver Public Schools appointed a custodian to to serve the Balarat site. The custodian's primary duties are to protect the site and assist in its development. Over the past

few months the custodian has carried out the following tasks:

--forestry

- mistletoe control - several hundred heavily infected trees cut
- beetle control - several hundred trees sprayed

--construction

- road and main trails repaired
- six picnic tables constructed
- bird houses built and placed near trails and "interpretative" areas so as to improve bird-nesting conditions on the site

--site exploration

- fire hazards spotted
- dangerous mine shafts located
- inventory of natural features made

--maintenance

- trash picked up
- privies repaired and cleaned
- trails and roads maintained

Operation Challenge

During this past summer the first pilot program at Balarat was made possible through an ESEA Title I project. This forty-two day program was called "Operation Challenge." The purpose of this project was to provide twenty pupils--five each from West, North, Manual and East High Schools--an opportunity to develop their leadership ability through "Outward Bound" type and environmental education experiences.

Among the many activities pupils participated in were learning construction skills through activities at the site; outdoor skills of mountain climbing, survival, and hiking; and recreational skills of fishing and hunting. The Operation Challenge teams explored primitive areas surrounding Balarat and marked three new trails across the Continental Divide which could be used in future programs at Balarat.

Research Services is now evaluating the results of this program. Preliminary reports indicate that its objectives were accomplished.

- Forestry Management, Disease Control and Fire Prevention Plan

  Planning is proceeding in cooperation with the State Foresters Office to develop a forestry management and disease control program. Primary work has been done to eradicate the black bark beetle infestation and mistletoe infection on the property. The key element for an effective fire-control program will be the assignment of a full-time resident-custodian. Until this is done, other phases of the fire-control program cannot be put into effect.

- Watershed Development

  The United States Soil Conservation Service through the Longmont Soil Conservation District has agreed to assist Balarat site development by providing an engineering plan. This plan is needed for creating a surface-water collection system. This

study also will include a range and soil management plan for the entire site.

As a result of this plan and additional hydrological and environmental engineering surveys, the district will become eligible to make application for funds to develop a water-control program. The Federal Water Control Administration assumes as much as 90 percent of such costs.

. Land Zoning

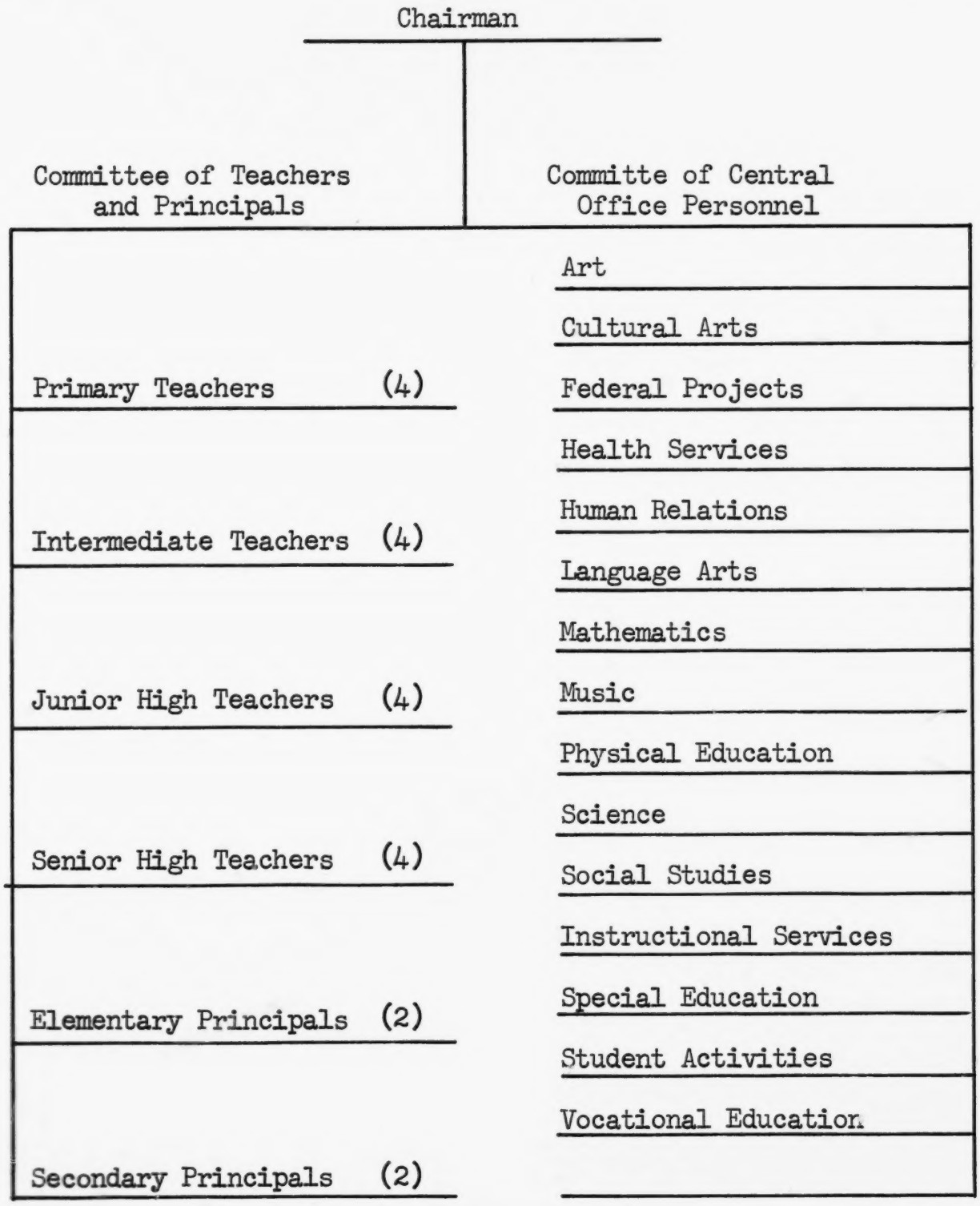
A preliminary study has been made for zoning the Balarat site in regard to service corridors, building sites, and natural-study areas. Before this activity can continue, however, further studies will need to be made by environmental engineering specialists. That engineering surveys of the site be made prior to building is critical to preserving the natural features of Balarat for instructional purposes. These efforts will be coordinated through the Division of Planning and Engineering.

. Curriculum Committee on Outdoor Education

If Balarat is to be a success, it must enlist teachers and administrators in the planning process to develop an inter-disciplinary approach. All subject disciplines must communicate with each other. As a result of this need, approval was given in February to organize a special outdoor education committee. This committee was formed. (See Chart A.)

Chart A

PROPOSED SPECIAL OUTDOOR EDUCATION COMMITTEE STRUCTURE



The committee met five times during the past school year, twice at the Balarat site to study its educational potentials.

After the first organizational meeting, this committee divided into subcommittees to study various aspects of the Balarat curriculum. Before school was out, many valuable recommendations and proposals had been presented by subcommittees for consideration. This committee and its subcommittees will meet again this year to further develop a comprehensive interdisciplinary guide for outdoor education.

THE SUMMARY

Children are naturally attracted to the out-of-doors, but today thousands of children in Denver are being deprived of living close to the land. To insure their living and learning in the out-of-doors is to make outdoor experiences a part of the educational process. As the result of the support shown by this board of education, the administration, the teachers, and the Denver community, Balarat is becoming a part of the process.

During this critical time in the history of the United States, Americans must begin to look seriously at what they are doing to their environment. Our children must get as a part of their education the knowledge, the understanding, and the conscience to maintain their environment.

In addition to those of the programs already begun, the Balarat staff has set for the coming year four primary goals:

- to establish measurable objectives and priorities for the four curriculum programs and development of the original site over a five-year time period, devising alternate plans for achieving the objectives, projecting a cost for each alternative, and making recommendations based on the results
- to put into operation an effective day-use program for pupils from kindergarten through grade twelve
- to continue organization of the Balarat Foundation in order to assist the Denver Public Schools both in soliciting adult

participation and in raising the money needed to finance this project

. to continue to inform individuals, organizations, and agencies of the Balarat program and to solicit their support

There is still much planning and effort necessary to make the proposed programs at Balarat a realization. But with the evidence of support and the interest already shown by the public, the Denver Public Schools will meet this challenge.